As we approach the Fall, I realize anew how quickly time passes and how much we have accomplished since the last newsletter. As in past years, we have seen doors of opportunity opened up for new faculty members. We welcomed Yong Jiang, Ph.D., tenure track Assistant Professor, and he bolsters our cancer research program. We also welcomed James Sheffey, M.D., non-tenure track Assistant Professor, who is assisting and teaching in the human gross anatomy and case based learning courses. Other faculty recruitments are still underway, which will “bulk up” Biomedical Sciences later this year and into 2019. I am very grateful to the search committees, under the very capable leadership of Drs. Kostrzewa and Kwasigroch, for their hard work in selecting, interviewing and recommending faculty candidates. Also, we warmly welcome our newest staff member, Sarah Gilham, Coordinator for our human resources activities, as well as the many research staff and students who have joined various laboratories. Finally, we also welcomed our new Dean, Dr. Bill Block, and look forward to working with him to fulfill our mission. At the other end of the spectrum, we saw several people leave and congratulate Dr. Dennis Defoe, Dr. Theresa Harrison, and Judy Whittimore, thanking them for their contributions over lengthy periods of time, and wish them many years of happy retirement. We also said our farewells to Regenia Phillips-Campbell and wish her well in her new faculty position. Sadly, this year found us saying goodbye to Emeritus Professors Dr. Rob Wondergem and Dr. Robert Rasch who passed away. Both had made significant contributions to the College of Medicine throughout their many years of service.

I continue to be impressed with the caliber of the faculty who teach and the academic results we help the students achieve. Dr. Schoborg’s section in this newsletter highlights the faculty and staff who won awards, both individually and as members of courses. Many more of our department were nominated and deserve congratulations as well. Of special note is that Dr. Schoborg won the prestigious ETSU Graduate Faculty Award for Outstanding Mentor. He also was selected as one of the two hooders at the medical student convocation, a great honor indeed. Dr. Michelle Duffourc received a well-deserved appointment to the Executive Committee for the Davison of Pharmacology Education (DPE), of the American Society for Pharmacology and Experimental Therapeutics (ASPECT). Our department celebrated the graduation of four students from the Biomedical Science Graduate Program. We congratulate them, as well as their supervisors, and wish them well in further developing their careers. Hence, we now welcome our two newest graduate students, Hannah Malone and Mary Wingard to the department.

DBMS research is continuing to grow, as is evident from the many publications. Much work and perseverance went into many grant submissions. The hard work paid off with new grant awards totaling more than $6 million! Congratulations to Drs. Beaumont, Brown, Hayman, Hoover, Ordway, Polichnowski, Schoborg, Singh and Zhu, as well as to my own lab members.

In sum, I am pleased with where DBMS is in its development and am confident that we will be able to fulfill our research and teaching mission for decades to come. Our accomplishments within the department are notable and reflect a department that is inspired and motivated. Many thanks to all faculty, staff, and students for all that you contribute to the success of the department.

Wishing everyone a very successful and enjoyable Fall.

—THEO HAGG
Department of Biomedical Sciences Excels in Funding

New Grant Funding Over the Next 5 Years Totals More Than $6 Million.

Granting Agencies Include National Institutes of Health, American Heart Association, American Foundation for Suicide Prevention, Swiss National Science Foundation (NSF). Outstanding!

GRANT AWARD SUMMARIES

Funded By: NIH
Type: R01 HL141560-01A1 (Cardiovascular)/Neuroscience
Total Award: $2.5M
Project Period: August 1, 2018—June 30, 2020
Principal Investigator: Dr. Eric Beaumont. Co-Investigator: Dr. Mike Andresen
Project Title: Afferent Mechanisms of Vagal Neuromodulation Therapy
Project Description:
Neuromodulation therapy using vagal nerve stimulation (VNS) is approved for the treatment of heart failure, but clinical protocols have been established without a scientifically based approach. Since most of the neurons in the vagus nerves send signal to the brain during VNS therapy, we propose to optimize these settings by targeting specific recorded neuronal responses in the brain. Our preliminary results suggest that amplification of the signal in a certain region of the brain is critical for therapeutic efficacy, which has never been explored before.

Funded By: NIH
Type: R01 (Neuroscience)
Total Award: $1,613,258
Project Period: July 15, 2018—April 30, 2023
Principal Investigator: Dr. Theo Hagge
Project Title: Targeting Blood-Derived Integrin Signaling After Stroke
Project Description:
This grant examines the role of blood vitronectin that leaks into the brain after stroke in stimulating production of inflammation leading to tissue loss, in female mice where it seems to play a unique detrimental role compared to males. We also will use pharmacological and genetic approaches to define the components of the integrin-FAK cellular signaling pathway and female specific mechanisms. We expect to identify new treatments to maximize tissue protection and function that will hopefully extend beyond stroke to treatments of other neurological disease.

Funded By: NIH Academic Research Enhancement Award, Department of Health and Human Services, National Institute of Allergy and Infectious Diseases
Type/Grant No.: 1R15AI136669-01A1 (Infectious Disease)
Total Award: $406,970
Project Period: 06/08/2018—05/31/2019
Principal Investigator: Dr. Russ Hayman
Project Title: Microsporidia Spore Adherence to Integrin Ligands
Project Description:
Microsporidia are intracellular fungal pathogens found in contaminated water that can cause asymptomatic infection in healthy people and disease in immune-suppressed people when ingested. This proposal is designed to characterize the role integrin surface receptors play in how microsporidia spores attach to host cell surfaces. In previous studies, we show that when spores are prevented from attaching to host cells, the rate of infection decreases. This leads us to hypothesize that spore adherence is related to the infection process.
Funded By: NIH (NHLBI)
Grant Type/Number: R15HL141947 (Cardiovascular)
Total Award: $425,447
Project Period: August 1, 2018 —July 31, 2021
Principal Investigator: Dr. Krishna Singh
Other Investigators: Co-Investigator, Dr. Mahipal Singh; Consultants, Drs. Gary Wright and Chuanfu Li
Project Title: Cardioprotective Role of Extracellular Ubiquitin in Myocardial Ischemia/Reperfusion Injury and Myocyte Apoptosis
Project Description: Cardiac myocyte loss due to apoptosis plays a significant role in the progression of heart failure. The studies of this proposal are based on our novel observations that exogenous ubiquitin (UB) plays a protective role in β-adrenergic receptor-stimulated myocyte apoptosis and heart function. The proposed studies investigating the molecular signals by which extracellular UB plays a protective role in myocyte apoptosis and myocardial dysfunction following myocardial ischemia/reperfusion injury may provide rationale for the development of cost effective therapeutic use of UB as a treatment for heart failure.

Funded By: NIH Small Business Innovative Research
Total Award: $45,000
Project Period: August 1, 2018—May 31,2019
Principal Investigator: Dr. Russ Brown
Project Title: Application of Novel Anti-inflammatory Drugs Towards Alzheimer’s Disease
Project Description: Our laboratory has been collaborating with P2D Bioscience, Inc., for approximately three years investigating anti-inflammatory drugs that inhibit the pro-inflammatory cytokine Tumor Necrosis Factor (TNF) alpha towards several diseases, including Alzheimer’s Disease and Schizophrenia. This subaward is part of a Phase II SBIR award to P2D Bioscience investigating their novel anti-inflammatories in a preclinical triple transgenic mouse model of Alzheimer’s Disease (3xTg). Our primary role in this work is to behaviorally test these animals across a number of behavioral tasks after presentation with the anti-inflammatory drug through the animal’s diet. In addition, we will be analyzing brain tissue for microglial activation as well as analyzing cytokine expression in brain areas critical in mediating cognitive function.

Funded By: NIH
Type: -Cardiac SPARC Consortium Grant
Total Award: $236,800
Project Period: July 1/2018—June 30, 2019
Principal Investigator: Dr. Don Hoover
Project Title: Comprehensive Structural and Functional Mapping of the Mammalian Cardiac Nervous System
Project Description: Dr. Hoover has received a second year of funding through a subaward on the NIH-sponsored Cardiac SPARC Consortium Grant. The primary award for this project, titled “Comprehensive Structural and Functional Mapping of the Mammalian Cardiac Nervous System”, is to Kalyanam Shivkumar M.D. Ph.D., Director of the UCLA Cardiac Arrhythmia Center & EP Programs. ETSU is one of 15 subaward institutions, which include Dalhousie University, University of Oxford, and major universities across the United States. During this year, Dr. Hoover’s group and collaborators at UCLA will continue investigating the neurochemical anatomy of porcine hearts, including projections to the SA node, begin neuronal tracing studies to identify circuitry and related neurochemistry in porcine hearts and start evaluating neurochemical anatomy of the human intrinsic cardiac nervous system.
**Funded By:** NIH  
**Type:** R15 MH114161 (Neuroscience)  
**Total Award:** $430,105  
**Project Period:** April 2018—March 2020  
**Principal Investigator:** Dr. Gregory Ordway, Senior Advisor to the Dean for Research  
Professor, Departments of Biomedical Sciences and Psychiatry and Behavioral Sciences  
Co-investigators: Michelle Chandley, John Kalbfleisch, Yue Zou, Craig Stockmeier (University of Mississippi Medical Center), and James Overholser (Case Western Reserve University)  
**Project Title:** Oxidative Damage and Base Excision Repair in White Matter Oligodendrocytes in Major Depressive Disorder  
**Project Description:**  
Currently available antidepressants produce remission in only two-thirds of patients with depression, a disorder that affects over 10 million people in the US each year. The proposed study deviates from traditional studies of the pathobiology of depression that focus on systems directly affected by current, and less than adequate, antidepressants. This research will test the hypothesis that the consequences of the cellular vulnerability of oligodendrocytes to reactive oxygen species in major depressive disorder is increased oxidation of DNA in brain white matter, and an elevated activation of DNA base excision repair that results in facilitation of inflammatory pathways and increased consumption of cellular energy supplies. The proposed research is designed to unearth depression-related vulnerabilities of specific brain cells uniquely susceptible to oxidative damage, uncovering novel targets for drugs that could prevent or reverse brain pathology in depression.

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**Funded By:** NIH National Institute of Aging  
**Type:** R15 (Neuroscience)  
**Total Award:** $444,000  
**Project Period:** July 1/2018—June 30, 2021  
**Principal Investigator:** Dr. Meng-Yang Zhu; Co-Investigators Dr. Russ Brown, and Dr. Gerald Deehan, Psychology.  
**Project Title:** Restoration of Noradrenergic and Dopaminergic Functions in the Brain of Aged Rats  
**Project Description:**  
The biochemical and functional decline in the locus coeruleus-norepinephrine (LC-NE) and dopamine (DA) systems is a common pathophysiology of aging with altered cognitive alterations observed in aged individuals. Strategies to restore the activity and function of these systems are currently limited. This proposed research seeks to use genetic and pharmacological manipulations to restore waning noradrenergic and dopaminergic functions in the brain of aged rats. Several approaches are taken. First, the lentiviral cDNA constructs of transcription factors are injected into the LC region of aging rats. Second, pharmacological treatments with either NE precursor L-DOPS, adrenoceptor antagonists or agonists are performed. Finally, dopaminergic neuronal cell line will be used to explore the molecular mechanisms underlying the facilitative effects induced by NE and the related neurotrophin on the dopaminergic phenotype. There are potentially generalized benefits in work that manipulation of the noradrenergic system may not only improve aging-related dysfunction in the noradrenergic system, but also those of the dopaminergic system. The results from the proposed experiments will help in understanding the link between NE and DA systems in the pathophysiology of aging.
Funded By: Swiss National Science Foundation (SNF)
Total Award: $US 720,000
Award Years: November 2018—November 2022
Principal Investigators: Dr. Nicole Borel, University of Zurich (Pl), Dr. Robert Schoborg (Co-I), Dr. N. Low (Co-I), Dr. M. Unemo (Co-I) and Dr. B. Bertisch (Co-I) were just awarded a 680,000 Swiss franc, 4 year grant by the Swiss National Science Foundation (SNF). http://www.snf.ch/en/Pages/default.aspx.
Project Title: Elucidating the Pathogenic Interplay Between Chlamydia Trachomatis and Neisseria Gonorrhoeae: Shedding Light on Increased Susceptibility to Infection?
Project Aims:
We aim to determine whether NG and CT interact in culture (Aims 1 and 2), determine whether NG super-infection can induce renewed chlamydial shedding in two murine chlamydial persistent/latent infection models (Aim 3), and explore NG and CT co-infection in cultured gastro-intestinal (GI) cells and anorectal patient samples (Aim 4).
Expected results and impact: Our project will improve the understanding of the pathogenic interplay between these two important STI agents in both the genital and gastrointestinal environment, which is particularly important as the effectiveness of current treatment/prevention programs has come into question recently. Published studies indicate that: i) NG-infected women are more susceptible to CT infection than would be expected by chance; and ii) NG co-infection can reactivate CT shedding during latent/persistent chlamydial infection in vivo. We would like to determine if PPNG abrogates penicillin (PEN)/AMX-induced chlamydial persistence in vitro and in vivo. We will also determine if NG coinfection can re-stimulate chlamydial shedding from CM-infected mice that have previously spontaneously ceased vaginal chlamydial shedding. These co-infection studies will be used to model the resumed genital shedding of infectious chlamydiae observed in NG co-infected women. Finally, the co-infection studies in cultured GI cells and in human patient rectal samples will set the stage for future development of a murine rectal co-infection model that will be used to elucidate whether rectal infection with NG may predispose the host to chlamydial infection and/or transmission (or vice versa).

Funded By: American Heart Association
Type: 18AIREA33960441
Total Award: $150,000
Project Period: July 1, 2018—June 30, 2020
Principal Investigator: Dr. Eric Beaumont. Co-Investigators: Dr. Regenia Campbell and Dr. Rob Schoborg.
Project Title: Vagal Nerve Stimulation Mitigates Alteration of the Intestinal Environment to Limit the Progression of Heart Failure.
Project Description:
Vagus nerve stimulation (VNS) therapy improves cardiac function in preclinical studies, but has had inconsistent success in clinical trials. Its complete mechanism of action is not well understood, a substantial obstacle for manipulating treatment parameters to improve success rates. VNS increases parasympathetic activity, which decreases the load on the heart, but data from our laboratory suggest a more complex mechanism of action. The vagus nerve also innervates the gut with bi-directional communication along the gut-brain axis. Altered gut microbial diversity is associated with chronic diseases, including heart failure (HF), but changes to some bacterial genera have been shown to positively affect heart health. Gut flora have even been shown to affect the success of cancer immunotherapy and antithrombotic aspirin therapy regimens. Our published data indicate VNS prevents aberrations observed in fecal samples from HF animals, leading us to hypothesize that the GI tract microbiome and microenvironment modulate the beneficial effects of VNS in heart failure.
Funded By: American Foundation for Suicide Prevention  
Grant No. DIG-0-109-17  
Total Award: $125,000  
Project Period: October 1, 2018—September 30, 2020  
Principal Investigator: Dr. Gregory Ordway  
Project Title: Hippocampal Poly(ADP-ribose) Polymerase-1 (PARP1) in Depression and Suicide  
Project Description:  
Depression is a leading contributor to suicide, with the majority of suicides being associated with depressive disorders. While antidepressants are effective in managing depression in some patients, approximately 30% of patients do not get well even after being treated with different antidepressants. With a background literature demonstrating elevated inflammation and oxidative stress in depressive disorders and suicide, we recently discovered that depression and suicide are associated with elevated levels of DNA oxidation and upregulation of an enzyme that works to repair DNA, poly(ADP-ribose) polymerase-1 (PARP1) in brain white matter. This novel finding is very interesting because besides DNA repair, PARP1 is linked directly to neuro-inflammation, and many recent findings demonstrate a role of neuro-inflammation in depression and suicide. The significance of this finding was illustrated by our recent report that inhibitors of PARP1 produce antidepressant behavioral effects in rats, and potentiate the antidepressant effects of fluoxetine, suggesting that these drugs have great potential to improve treatment for depression in humans. This grant will investigate PARP1 and its downstream inflammatory mediators in the anterior hippocampus in brain donors who died by suicide and had depression at death. This work is important because the anterior hippocampus is part of the neuronal circuitry regulating mood, contains brain neurons that are especially sensitive to oxidative stress-induced damage (similar to some white matter cells), and is a brain region with other established pathologies in depression and suicide. We hypothesize that oxidative stress-sensitive neurons in the anterior hippocampus will demonstrate elevations of DNA oxidation and PARP1 expression, similar to white matter cells in depression and suicide. Moreover, we anticipate that this biochemical pathology will be accompanied by increases in downstream inflammatory mediators (poly (ADP-ribose) polymers, NF-B) that are linked to elevated PARP1 activity. Through the identification of biochemical pathologies induced by oxidative damage in a brain region that processes behaviors relevant to depression and suicide, this research has a strong potential to reveal additional novel targets for the development of drugs to treat depression and/or reduce suicidal behavior, and to facilitate future studies directed at developing strategies to prevent oxidative/inflammatory damage and subsequent depressive or suicidal behaviors.


It is with great sadness that Dr. Robert “Rob” Wondergem, Professor Emeritus, passed away on March 21, 2018. Rob was proud of the fact that he was among the founding faculty at the James H. Quillen College of Medicine. His reputation could not be surpassed. He was held in highest esteem by all who knew him. Not only was he known for his intellect, but he was better known for his kindness and sincerity. He genuinely regarded and respected his colleagues, staff, students, and friends. Rob had been retired since March 15, 2017, following 38 years of outstanding and dedicated service to the College of Medicine.

It is also with great sadness that Dr. Robert “Bob” Rasch, Professor Emeritus, passed away on April 6, 2018. Bob joined the James H. Quillen College of Medicine in 1977 as the Inaugural Chair of the Department of Physiology. Upon Dr. Rasch’s retirement in 1978, Dr. Rob Wondergem served as Interim Chair (1987-1989) until the recruitment of a new chair. Rasch’s role as Physiology Chair in the newly organized College of Medicine was nothing less than outstanding and innovative. Dr. Rasch recruited Dr. Rob Wondergem, Dr. Carole Williams, Dr. Brian Rowe, Dr. David Kern, and Dr. Barbara Turner, to team-teach the Medical Physiology Course.

**SCIENTIFIC MEETINGS**

**Donald Ngwa,** graduate student, presented a paper at the “Immunology 2018” meeting sponsored by the American Association of Immunologists in Austin, TX, on May 7. The title of the paper, coauthored by Sanjay Singh, Toh Gang, and Alok Agrawal, was “A C-reactive protein-based strategy to reduce antibiotic dosing.” *J. Immunol.* 200 (Issue 1 supplement): 170.14, 2018.

**Asmita Pathak,** graduate student, presented a poster at the “Immunology 2018” meeting sponsored by the American Association of Immunologists in Austin, TX, on May 7. The title of the paper, coauthored by Sanjay Singh and Alok Agrawal, was “C-reactive protein is an atheroprotective molecule.” *J. Immunol.* 200 (Issue 1 supplement): 170.16, 2018.

Oral presentation at the *Candida* and Candidiasis meeting during Session Hot Topics: presentation entitled “*Candida auris* cell wall mannans exhibit unique structural features that are not found in other fungi” **M. Kruppa,** D. Lowman, Z. Ma, Y.N. Jiao, B. Graves, P. Rice, J. F. Meis, M.G. Netea, D. L. Williams. Providence, RI April 17.

Poster presentation. D. Stuffle, C. Presley, and **M. Kruppa** *A C. albicans* two-component pathway regulates the *CDR4* and *SSU1* transport genes involved in quorum sensing and response to bacterial signaling molecules. Conference on *Candida* and Candidiasis, provinice RI April 17, 2018.

BMS GRADUATE STUDENT AWARD

Congratulations extended to Dr. Alok Agrawal who received the 2017-2018 Biomedical Science Graduate Students “Professor of the Year” Award.

STUDY SECTION REVIEW COMMITTEES

- Dr. Alok Agrawal, served on the NIH Innate Immunity and Inflammation study section grants review committee, held in Arlington, VA, February 15-16, 2018.
- Dr. Mike Kruppa, Ad Hoc Reviewer, ZRG1 F13-Z(20) Infectious Diseases and Microbiology Fellowship Review Panel (July 2018-Denver)
- Dr. Rob Schoborg, served on the NIH/NIGMS Postdoctoral Research Associate (PRAT) grant review panel committee member.
- Dr. Rob Schoborg, Ad Hoc Reviewer, NIH NBRs Program Grant Review Panel.
- Dr. Rob Schoborg, Ad Hoc Reviewer, Netherlands Organization for Scientific Research (NOW) Grant Review Panel
- Dr. Valentin Yakubenko, served on the Surgical Sciences, Biomedical Imaging and Bioengineering study section review committee, NIH, held in Bethesda, MD, February 2018.

DBMS FACULTY MEMBER RECEIVES NATIONAL RECOGNITION FOR TEACHING EXCELLENCE

Dr. Michelle Duffourc, Associate Professor in the Department of Biomedical Sciences, was recently appointed to the Executive Committee for the Division of Pharmacology Education (DPE) of The American Society for Pharmacology and Experimental Therapeutics (ASPET) for a 2 year term. This appointment serves as national recognition of Dr. Duffourc’s contributions to Pharmacology education and was due to her “extensive experiences teaching pharmacology, commitment to educational excellence, and passion about becoming more involved in the DPE”. The DPE promotes rational design and use of therapeutics by facilitating development of pedagogical skills in pharmacology educators and promoting educational research in pharmacology – with a primary focus on pharmacology teaching and learning by graduate and health sciences students. This national recognition is not the first for Dr. Duffourc, who, in 2013, was also awarded one of two ASPET Pharmacology Education Awards. Finally, Dr. Duffourc has been invited to be a Symposium Platform Speaker at the joint Experimental Biology/ASPET meeting in Orlando, FL in 2019. Her seminar will be titled “Connecting for Success”. The symposium (Surviving an Existential Threat – Creating a Niche for Basic Science Educators) will focus on helping early to midcareer basic science educators from various disciplines by providing valuable tips, suggestions and guidance that will enable them to grow in their careers in these challenging times of rapid change.

Such honors help raise the national visibility of the medical education program at Quillen College of Medicine and result not only from Dr. Duffourc's dedication and hard work but from that of all staff and faculty who contribute to making the Medical Pharmacology course an effective learning experience for our medical students.

Congratulations to Dr. Duffourc on this prestigious honor!

CELL AND MOLECULAR MEDICINE (CMM) COURSE GAINS QUALITY RECOGNITION

Congratulations to the staff and faculty involved in the Cell and Molecular Medicine (CMM) course taught to the 1st year medical students. Essentially, an AAMC representative recently reached out to Dr. Olive on behalf of another US medical school seeking help with improving their pre-clinical instruction in Biochemistry. QCOM was chosen as one of the medical schools to provide this assistance based upon how our graduating students rate the quality of their Biochemistry education on the AAMC graduation questionnaire (AAMC GQ). On the 2018 AAMC GQ, 41.5% of QCOM students rated their pre-clinical Biochemistry preparation as “excellent” compared to a national average of 22.2%. Furthermore, 87.7% of QCOM students rated their Biochemistry preparation as “good” or “excellent”, compared to a national average of 62.3% for these 2 categories.

To be identified by the AAMC to provide such assistance constitutes a significant national recognition for our institution and highlights the educational quality that the DBMS staff and faculty provide.

Many thanks to Mitch Robinson, Doug Thewke, David Johnson, Antonio Rusiñol, Angela Thompson, and Kim Johnson for their contributions.
Dr. Aaron Polichnowski Receives Two Research Awards from American Physiological Society

http://www.the-aps.org/mm/awards/Other-APS-Awards/Recipients/Mandel-YIA.html

Dr. Aaron Polichnowski’s Abstract entitled “Striking Differences in Urinary Uromodulin, Salt-sensitive Hypertension and Proteinuria in Dahl SS vs. SS.BN1 Consomic Rats,” was selected by the Renal Section of the American Physiological Society for a “Research Recognition Award.” As stated on the website, “The 2018 Renal Section Research Recognition Award recognize the meritorious research by young investigators (junior faculty) who participate in the Experimental Biology Meeting.” A Travel Award of $500 was included.

Aaron gives credit to all laboratory members for their contribution to this abstract presented at the Experimental Biology meeting held April, 2018 in San Diego. Those individuals in the picture from left to right are: Conor Miles (undergraduate APS student), Shannon Allen (research technician), Aaron Polichnowski, PI, and Jacqui Potter (research technician). All of the work described has been performed at ETSU and is in large part the dedicated efforts of Dr. Polichnowski’s lab personnel. Rowdy Jones, who is not pictured, also contributed to the project.

Dr. Polichnowski also received the American Physiological Society Lazaro J. Mandel Young Investigator Award. The award was established in 1999 in memory of Lazaro J. Mandel, professor of physiology at Duke University and long-standing APS member. The Award is given annually to a member of APS working within the U.S. who holds an academic rank no higher than Assistant Professor. The Award is intended to support an individual demonstrating outstanding promise based on their research program in epithelial or renal physiology. The award of $10,000 is designated for the use of the Awardee in their research program.

Dr. Polichnowski acknowledges the hard work and dedication of Shannon Allen, research technician in the lab. Shannon was accepted to the prestigious Immunology and Infectious Diseases PhD program at Washington State University. In addition to tuition and fee waivers and a generous stipend, she was awarded the NIP Protein Biotechnology Training Grant and the ARCS Fellowship. She will be leaving ETSU in May. The department wishes Shannon much success in her career path.
Dr. Valentin Yakubenko’s group in collaboration with the Cleveland Clinic scientists published a manuscript in the prestige journal Blood (Impact factor 15).


The study was selected for the cover page highlight and cover image. The editorial comment on the study is published in the same journal issue (*Blood*. 2018 Jul 5;132(1):4-5.). Markus Sperandino from the Ludwig-Maximilians-Universitat (Munchen) writes in the comment that “In summary, Yakubenko and colleagues have revealed a new and interesting mechanism of indirect crosstalk between neutrophils and macrophages during sterile inflammation...Taking into consideration the differential modulation of macrophage subtypes by 2-(ω-carboxyethyl)pyrrole (CEP), inflamed tissue-expressed CEP might turn out to play an important modulating role in fine-tuning the transition from the initial proinflammatory phase to the subsequent resolution phase of inflammation.
At the annual meeting of the Tennessee Physiological Society (TPS), held at Quillen in October 2017, Kui’s presentation “Regulation of pro-inflammatory (M1) and anti-inflammatory (M2) macrophage migration by β2 integrins during inflammation” was judged one of the two best student posters of the meeting. In addition to the best poster award presented at the meeting, the TPS also gives a travel award if the student agrees to present his/her research at the next meeting sponsored by the American Physiological Society. Doctoral student Kui Cui received a $500 Travel Award to the Experimental Biology 2018 Conference from the Tennessee Physiological Society.

Kristina A. Lim, Honors Undergraduate Student, was the recipient of student-faculty (Kristina Lim - Krishna Singh) collaborative grant from the Office of Undergraduate Research and Creative activities (ETSU) in the amount of $1,196. Kristina graduated May 2018 from ETSU:

**Supervisor: Dr Krishna Singh**

Dr. Sanjay Kumar, Assistant Research Professor, was the recipient of a 2018 AAI Early Career Faculty Travel Grant in the amount of $1,250. The grant covered expenses associated with the AAI Annual Meeting—Immunology, Austin, TX, May 4-8, 2018.

The 2018 Health & Safety Annual laboratory inspections revealed that our labs meet the health and safety requirements. Dr. Hagg comments, “Congratulations! Thank you for maintaining a safe environment for everyone. A special big thanks to TJ and Jerry for keeping us in good standing with ETSU EH&S requirements.” TJ Neal and Jerry Keplinger are OSHA Coordinators for the Department.

ETSU Toxicology Section also received a “Good Standing” report. The Toxicology Laboratory has not had a deficiency since 2010! The laboratory is run by Dr. Kenneth Ferslew and laboratory Supervisor, Emily Lemieux.
ETSU faculty at BMS and CII have recently contributed to a Springer Nature book which is now in production (ISBN# 9789811072956). Dr. Quin Xie is one of the editors of this book. BMS and CII faculties, and graduate students made significant contribution to this book and either led in writing or participated in 3 out of 10 chapters.

Chapter 6: Brian M. Cartwright, Phillip R. Musich, Yue Zou. DNA Damage: Cellular Responses, Repair, and Cancer Treatment.

Chapter 7: Nariyoshi Shinomiya, Qian Xie, George F. Vande Woude. Met Activation and Carcinogenesis.

Chapter 8: Douglas P. Thewke, Jianqun Kou, Makenzie L. Fulmer, Qian Xie. The HGF/MET Signaling and Therapeutics in Cancer.

The late Dr. Rob Wondergem provided his critical reading and editing the content of Chapter 8 for this book.

Springer Nature Highlights “World-Changing Articles”

Congratulations are extended to Dr. Rob Schoborg for receiving special distinction from the editors of Springer Nature. The following article reached 30,000 downloads as of February 2018, and Chosen by the Editors-in-Chief of the Springer-Nature journal collection to be one of the 180 papers in the “Change-the-World” article collection.


Springer Nature launched this initiative and are “proudly presenting 180 must-read articles across disciplines that could help change the world. They… "want to support authors who are tacking today’s global challenges to facilitate real change." [https://www.springernature.com/gp/researchers/campaigns/change-the-world]

Dr. Greg Ordway, Senior Advisor to the Dean for Research, and Professor of Biomedical Sciences, participated in a “Table of Content” Fundraiser for ETSU hosted by the Sherrod Library March 23, 2018. This event included a light dinner with invited public. Various invited faculty from throughout the University presented a topic of special interest to them in an informal setting. At his table Dr. Ordway’s topic was, “Don’t Worry Be Happy: If Only It Were that Easy” A timely subject about depression and suicide. Ordway was also invited to appear on Daytime Tri Cities (WJHL-TV) on March 5 to promote this event.

ETSU SERVICE AWARDS - 2018

Presented to the following employees in Recognition for Continuous and Loyal Service to the State of Tennessee

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<thead>
<tr>
<th>Name</th>
<th>Years of Service</th>
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<tr>
<td>Dr. Kenneth Ferslew</td>
<td>35 YEARS</td>
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<td>Ms. TJ Neal</td>
<td>25 YEARS</td>
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<td>Dr. Russ Hayman</td>
<td>15 YEARS</td>
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<td>Dr. Alok Agrawal</td>
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<td>Dr. Krishna Singh</td>
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<td>Ms. Mary Lou Hawk</td>
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<td>Dr. Meng-Yang Zhu</td>
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<tr>
<td>Dr. Eric Beaumont</td>
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Congratulations to the following BMS Department faculty, students, and staff on their 2018 Caduceus Awards. Thank you to all BMS department members who are involved (directly or indirectly) in educating our medical and graduate students!

**Deans Distinguished Award in Teaching:**
- Tom Ecay

**Faculty Scarlet Sash Awards:** (of 14 total chosen by the graduating medical class of 2018)
- Russ Hayman
- Tom Kwasigroch
- Paul Monaco
- Rob Schoborg

**“String of Pearls” Speakers:** (of 8 total chosen by the graduating medical class of 2018)
- Michelle Duffourc
- Russ Hayman
- Tom Kwasigroch

**Graduation Hoorder Award:** (of 2 total chosen by the graduating medical class of 2018)
- Rob Schoborg

**Caduceus M1 Outstanding Course of the Year Award:**
- *Medical Human Gross Anatomy and Embryology* (Tom Kwasigroch, Caroline Abercrombie, James Denham, Regenia Campbell, Rob Becker, Rebecca Steele, Cindy Canter, and Tonya Ward)

**Caduceus M1 Professor of the Year Award:**
- Tom Kwasigroch

**Caduceus M2 Outstanding Course of the Year:**

**Caduceus M2 Outstanding M1/M2 Staff of the Year:**
- Rob Becker

**School of Graduate Studies Research Grants:**
- Rudy Chapman (Advisor: Diego Rodriguez-Gil)
- Wesley Gill (Advisor: Russ Brown)

**School of Graduate Studies Outstanding Dissertation of the Year:**
- Makenzie Fulmer (Advisor: Doug Thewke)

**School of Graduate Studies Outstanding Graduate Faculty Mentor Award:**
- Rob Schoborg
Appalachian Student Research Forum (ASRF)  
April 4-5, 2018  
Congratulations to the following students and their mentors for winning awards.

- **Pathak, Asmita**  
  First Place, Doctoral Biomedical Sciences Oral Presentation  
  *C-Reactive Protein Is An Atheroprotective Molecule.*  
  Dr. Alok Agrawal, Advisor

- **Chapman, Rudy**  
  First Place, Doctoral Biomedical Sciences Poster Presentation  
  *Axonal Regrowth Of Olfactory Sensory Neurons After Chemical Ablation With Methimazole.*  
  Dr. Diego Rodriguez-Gil, Advisor

- **Miller, Brandon**  
  First Place, Medical Students Social, Behavioral, Biomedical & Health Sciences Group A Poster Presentation  
  *Effects Of Podocyte Dysfunction On The Susceptibility To Hypertensive Glomerulosclerosis.*  
  Dr. Aaron Polichnowski, Advisor

- **Stuffle, Derek**  
  First Place, Masters Biomedical Sciences Oral Presentation  
  *A C. Albicans Two Component Pathway Regulates The Cdr4 And Ssu1 Transport Genes Involved In Quorum Sensing And Response To Bacterial Signaling Molecules.*  
  Dr. Michael Kruppa, Advisor

- **Ameen, Muhammad**  
  Second Place, Masters Biomedical Sciences Poster Presentation  
  *Vitamin B2 Reduces Amyloid-Beta Proteotoxicity And Improves Health In A Caenorhabditis Elegans Alzheimer’s Disease Model.*  
  Dr. Patrick Bradshaw, Advisor

- **Oliver, Joe**  
  Second Place, Undergraduate Biomedical Sciences Group A Poster Presentation  
  *Inhibition Of Focal Adhesion Kinase Promotes Adult Olfactory Stem Cell Self-Renewal And Neuroregeneration Via Ciliary Neurotrophic Factor.*  
  Dr. Cuihong Jia, Advisor

**ASRF Judges—Poster Presentations:**  Dr. Eric Beaumont, Dr. Patrick Bradshaw, Dr. Russ Brown, Dr. Regenia Campbell, Dr. Suman Dalal, Dr. Yong Jiang, Dr. Michael Kruppa, Dr. Aaron Polichnowski, Dr. Diego Rodriguez-Gil, Dr. Antonio Rusinol, Dr. Krishna Singh, Dr. Sanjay Singh, Dr. Doug Thewke  
**ASRF Judges—Oral Presentations:**  Dr. Suman Dalal, Dr. Michael Kruppa, Ms. Ying Li, Dr. Aaron Polichnowski, Dr. Valentin Yakubenko

**ETSU Boland Undergraduate Research Symposium Participants—March 27, 2018**

- **Kristin Lim, Senior**  
  *Protective Anti-Inflammatory Role of Extracellular Ubiquitin*  
  Dr. Krishna Singh, Advisor

- **Ashley Cameron, Senior**  
  Identification of Farnesol in Extracellular Vesicles of Candida Albicans  
  Dr. Michael Kruppa, Advisor

- **Joe Oliver, Junior**  
  *Inhibition of Focal Adhesion Kinase Promotes Olfactory Stem Cell Self-Renewal and Neuroregeneration Via Ciliary Neurotrophic Factor*  
  Dr. Jia Cuihong, Advisor
BMS Employees Help to Celebrate Diversity at ETSU

Suman Dalal and Kristina Lim show off their dance talent as part of the ETSU Latin Dance Team. The team performed during the Fusion: Multicultural Showcase. The Showcase occurred on Sunday, April 15th, at the D. P. Culp Center. Their troop was featured on the front page of the Johnson City Press on April 16th.

The Fusion: Multicultural Showcase is a program at ETSU that “recognize and celebrates the diversity within the University community. There are over 15 cultures and ethnicities represented.”

Suman Dalal is a Postdoctoral Fellow in the laboratory of Dr. Krishna Singh. Kristina Lim was an undergraduate student in her lab.

Chiharu Lovins mixed doubles team won local league and went to the State Championship. Teams from Memphis, Chattanooga, Knoxville, and Nashville competed in Chattanooga. Chiharu’s personal record at state is 1 Win and 2 Losses (one was tied and lost with a tie breaker). Congratulations to Chiharu.

The “USTA League is the country’s largest recreational tennis league with more than 300,000 players nationwide competing on teams.”

CRYSTAL MAUPIN WINS THIRD PLACE ETSU PRIDE DECORATING CONTEST FOR 2018!
**Dr. Yong Jiang** joined the Department of Biomedical Sciences as Assistant Professor effective January 2018. Prior to joining the Department, Dr. Jiang was previously employed in the Department of Biochemistry and Molecular Biology, Medical University of South Carolina, in Charleston, as Research Assistant Professor.

Dr. Jiang, received his Ph.D. from Wayne State University School of Medicine, where his research focused on the regulation of membrane transport proteins and their structural analysis. During his postdoctoral training at the Cleveland Clinic Foundation, his study concentrated on the TGFβ and the Wnt/β-catenin signaling pathways, which are two key regulators of tumorigenesis and metastasis. After he moved to the Medical University of South Carolina as a Research Assistant Professor, his research focused on the role of the protease cathepsin B and the tumor suppressor Disabled-2 (Dab2) in TGF-b-induced autophagy and the epithelial-to-mesenchymal transition (EMT), which are two processes that play a pivotal role in tumor dormancy and metastasis. His current lab will focus on the following two major projects: The first project is to investigate the function of cathepsin B/Dab2 interaction in human breast cancer dormancy and recurrence using myc-inducible transgenic mouse models. Our preliminary in vitro data indicates that cathepsin B inhibitors are very promising candidates to attenuate tumor dormancy and tumor recurrence by stabilizing Dab2 expression. The second project is to investigate how chronic TGF-b treatment induces autophagy instead of EMT in epithelial cells in the absence of Wnt signaling. Previous microarray data indicates that Wnt signaling induces the activity of several kinases, which play a pivotal role in regulating autophagy. Overall, his research will aim to characterize how TGF-b and Wnt signaling pathways crosstalk to regulate EMT, autophagy, autophagy-mediated tumor dormancy and tumor recurrence. This study will provide insight into the potential of cathepsin B, Dab2 and Wnt-induced kinases as the novel therapeutic targets to improve the treatment of tumor recurrence and metastasis.

In his spare time, Yong enjoys reading fiction novels, particularly scientific fictions. He also enjoys swimming, and fishing (as time permits).

We are happy to announce that **James Sheffey, MD**, Assistant Professor, has joined the department. James was originally raised in Hendersonville, TN. He came to Johnson City in 2000 for undergraduate studies at ETSU. He was admitted into the premed-med program, and graduated in 2004 Magna Cum Laude with a major in Chemistry and minors in humanities, philosophy, and biology. He attended Quillen College of Medicine from 2004-2008. After graduation, he did a preliminary general surgery internship at ETSU. He then completed a categorical general surgery residency at ETSU and finished in 2014. James went to LSU Health Science Center in Shreveport for his Colon and Rectal Surgery fellowship and finished in 2015. Thereafter, he returned to Johnson City to practice in private practice.

James is currently refocusing his work, and accepted a faculty position in conjunction with the departments of Biomedical Sciences and Surgery. He participates in the human gross anatomy course and case based learning course. His focus with the surgery department is in laparoscopic and endoscopic simulation. He assist in preparing the resident physicians to take skills test that are required for their graduation.

In his spare time James enjoys fishing and spending time with his wife, Kim, and 18 month old son, Henry.
After 21 years of dedicated service to the College of Medicine, **Dr. Dennis Defoe**, Professor, began retirement in January of this year. Dennis plans to spend his free time working on projects around the home, traveling, and enjoying his hobbies. The Department appreciates his many years of dedication to teaching Cell & Tissue and Genetics, research, and service in support of the College of Medicine. Our best wishes go with him as enters into his retirement years.

**Dr. Theresa Harrison**, Research Associate Professor, retired June 30, 2018. For the past 20 years she was a dedicated faculty member and an asset to our teaching in neuroscience, research, and being active with our numerous committees. Theresa plans to travel, relax, and also plans to seek ways of giving back to society. We wish for her a very rewarding retirement.

**Dr. Regenia Phillips-Campbell**, Research Assistant Professor, accepted a Tenure Track Assistant Professor position in the Biology Department at Emory & Henry College, Emory, Virginia, August 1, 2018. It was a pleasure having Regenia in our department. We are confident she will excel wherever the “roads of opportunity” may lead her. Our best wishes for a successful career go with Regenia.

**Judy Whittimore**, Director of EM Sciences, retired at the end of May. After 38 years of working at ETSU, Judy is looking forward to a time of relaxation and meditation, and watching over her two long haired Chiwawa dogs and her “Ragdoll” Kitty. During her tenure, Judy initially worked for the Department of Pathology and was in charge of overseeing the Electron Microscope (EM). At a point, the EM became the property of Microbiology, and Judy then became an employee of the Department of Microbiology. We thank Judy for her many years of service to the College of Medicine. We are sure she will have a happy and fulfilling retirement.
**Welcome Sarah Gilham**

Sarah replaces Mary Lou Hawk as our Coordinator of our human resource activities effective May 29, 2018. Sarah obtained her BBA in Management from ETSU with a concentration in Human Resources. Prior to joining ETSU she was the HR Coordinator for Food City #601 in Johnson City.

Sarah lives in Johnson City with her husband and two sons. Her father’s family is from Dante, Virginia, and her mother’s family is from Korea. Her home is also shared with a dog and two cats. During her free time she enjoys many outdoor activities such as camping and kayaking.

**Welcome Biomedical Science Graduate Students**

Hannah Malone, She will remain in the laboratory of Dr. Theo Hagg.

Mary Wingard has joined the laboratory of Dr. Krishna Singh.

**Welcome Temporary Laboratory Staff**

Mary Herndon, Research Assistant, Dr. Beaumont’s Lab
Cory Leonard, Postdoctoral Fellow, Dr. Schoborg’s lab
Donald Lovins, Research Technician, Dr. Hagg’s lab
Elizabeth Smith, Research Technician, Dr. Hoover’s lab.
Stan Peirce, Research Technician, Dr. Hoover’s lab
Sebastian Hayoz, Research Associate, Dr. Eric Beaumont’s Lab
Patsy R. Thrasher  
Candidate for the Degree of Doctor of Philosophy in Biomedical Science  
May 30, 2018  
Title of Dissertation: Role of Ataxia-Telangiectasia Mutated Kinase in Cardiac Autophagy and Glucose Metabolism Under Ischemic Conditions  
Dr. Krishna Singh, Committee Chair

Jeddidiah W. D. Griffin  
Candidate for the Degree of Doctor of Philosophy in Biomedical Science  
June 11, 2018  
Quantitative Studies of Amyloidogenic Protein Residue Interaction Networks and Abnormal Ammonia Metabolism in Neurotoxicity and Disease  
Dr. Patrick Bradshaw, Committee Chair

Ying Li  
Candidate for the Degree of Doctor of Philosophy in Biomedical Science  
July 5, 2018  
Metabolic Plasticity in the Cellular Stress Response  
Dr. Gary Wright, Committee Chair

Richard Sante  
Candidate for the Degree of Doctor of Philosophy in Biomedical Science  
September 7, 2018  
Targeting the Vitronectin αvβ5 Integrin Receptor to Enhance Stroke-Induced Neurogenesis and Increase Neuroprotection After Stroke  
Dr. Theo Hagg, Committee Chair

Derek A. Stuffle,  
Master’s Candidate, Department of Biological Sciences  
March 19, 2018.  
Two Component Pathway Regulation of Transport Genes Involved in Quorum Sensing and Response to Bacterial Signaling Molecules in C. albicans.  
Dr. Michael Kruppa, Committee Chair
Matthew R. Zahner, Ph.D.
Assistant Professor
Department of Health Sciences
Hot pepper receptors on the heart
Date: February 9, 2018

Michael Kruppa, Ph.D.
Associate Professor
Candida auris: An emerging pathogen of serious concern
Date: February 23, 2018

Donald Ngwa
Graduate Student
Engineered C-reactive protein, antibiotics, and treatment of pneumococcal infection in mice
Date: March 9, 2018

Kui Cui
Graduate Student
Integrins αMβ2 and αDβ2 regulate migratory properties of M1 and M2 macrophages during inflammation
Date: April 20, 2018

Eric Beaumont, Ph.D.
Associate Professor
Afferent mechanisms of vagal neuromodulation therapy
Date: April 6, 2018

Rudy Chapman, Graduate Student
Axonal regrowth of olfactory sensory neurons after chemical ablation with methimazole
May 4, 2018

W. Drew Gill, Graduate Student
Behavioral and neurobiological evidence of epigenetic transmission in the neonatal quinpirole rodent model of schizophrenia
May 4, 2018

Theo Hagg, MD, PhD
Department of Biomedical Sciences
Inhibiting blood-derived integrin activation for neuroprotection after stroke
August 17, 2018
Richard E. Brown, Ph.D.
Professor
Department of Psychology and Neuroscience
Dalhousie University
Halifax, Nova Scotia
What have we learned about aging and dementia from mouse models?
Date: February 19, 2018

Brahm H. Segal, M.D., FACP, FIDSA
Chief of Infectious Diseases
Roswell Park Comprehensive Cancer Center
Professor of Medicine, Jacobs School of Medicine & Biomedical Sciences
University at Buffalo, Buffalo, NY
Inflammation and injury in ovarian cancer: Potential prognostic biomarkers and therapeutic targets
Date: March 23, 2018

H. Eric Xu, Ph.D.
Professor
Center of Biology
Laboratory of Structural Sciences
Van Andel Research Institute
Grand Rapids, MI
Structures and drug discovery of nuclear hormone receptors and G-protein coupled receptors
Date: April 30, 2018

Giedre Krencuite, Ph.D.
Research Associate
Dept. of Bone Marrow Transplantation and Cellular Therapy
St. Jude Children’s Research Hospital, Memphis, TN
CAR T-cell Therapy for brain tumors
Date: January 26, 2018
Hosted by Dr. Qian Xie
Sponsored by AARN Travel Award

Han-Rong Weng, M.D., Ph.D.
Assistant Professor
Department of Pharmaceutical and Biomedical Sciences
University of Georgia College of Pharmacy
Athens, GA
Targeting microglia for the treatment of pain
Date: May 3, 2018

Giedre Krencuite, Ph.D.
Research Associate
Dept. of Bone Marrow Transplantation and Cellular Therapy
St. Jude Children’s Research Hospital, Memphis, TN
CAR T-cell Therapy for brain tumors
Date: January 26, 2018
Hosted by Dr. Qian Xie
Sponsored by AARN Travel Award
Michelle Parvatiyar, Ph.D.
Assistant Project Scientist
Department of Integrative Biology & Physiology
University of California
Los Angeles, CA
Improving Disease Outcomes by Targeting the Cardiac Sarcolemma
May 7, 2018

Jeffrey Ardell, Ph.D.
Professor Emeritus
Neuraxial modulation for cardiac disease: Emerging opportunities for sudden cardiac death and heart failure
May 30, 2018

Tyrone Genade, Ph.D.
Assistant Professor of Biology
Northwestern College
Orange City IA
Does Nothobranchius furzeri Gonarezhou die from a Parkinson’s like Disease?
June 18, 2016

Chad R. Frasier, Ph.D.
Post-Doctoral Fellow
University of Michigan Medical School
Ann Arbor, MI
Antiarrhythmic Drugs: An Introduction
June 22, 2018

J. Gary Meszaros, Ph.D.
Associate Professor
Department of Integrative Medical Sciences
Northeast Ohio Medical Univ.
Rootstown, OH
Type 6 collagen – friend or foe? Improving cardiac remodeling after a myocardial infarction
August 27, 2018